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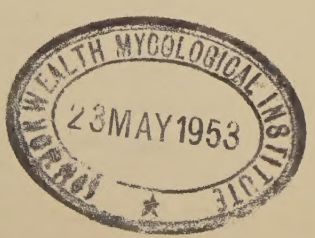

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KENYA

NYANZA PROVINCE

PROGRESS REPORT FOR THE SEASON 1951-52

BY

M. S. HASTIE.

Introduction.

In April 1951 the writer was sent to Nyanza Province, Kenya Colony, to start cotton investigational work there. The work is to be carried out at three stations which are fairly representative of the areas which they serve. The main station is situated at Kibos, about 7 miles from Kisumu in Central Nyanza. There is a substation at Bungoma in North Nyanza, and another near Homa Bay in South Nyanza. Kibos and Bungoma comprise about 45 acres each, and Homa Bay station 20 acres. The cost of these stations and of the investigational work is being met out of the Kenya Cotton Sales Fund.

By May 1952, land clearing and fencing had been pushed ahead at all three stations in order that they would be almost fully functioning for the 1952-53 season. The farm buildings at Kibos were completed and senior African staff houses and the office/laboratory block were nearing completion. On Bungoma, three African houses had been built but the farm buildings were not to be started till late in 1952. On Homa Bay no buildings had been started.

Rainfall.

	Bungoma Cotton Station	*Kibos*	*Homa Bay Ginnery (lake level)*	*Homa Bay Cotton Station about 4,000′*
April 1951	No record kept	15·54 inches	11·15 inches	No record kept
May	,,	6·93	12·85	,,
June	,,	3·26	3·55	,,
July	,,	3·40	0·20	,,
August	,,	3·99	6·30	,,
September	,,	1·93	5·40	,,
October	3·13 inches	6·60	2·50	3·15 inches
November	6·87	11·65	9·75	4·81
December	7·57	11·65	12·17	5·37
January 1952	0·11	Nil.	Nil.	0·25
February	3·57	4·71	Nil.	0·70
March	2·95	6·43	9·85	3·77
Total	—	76·09	73·72	—
Total October-March	24·20	41·04	34·27	18·05

No figures for other seasons are available. Places around Kibos showed 50% higher rainfall during 1951. The mean for Kibos should be about 48 inches.

Rainfall during the 1951-52 season was unusually heavy and prolonged. There was no real break between the main and the second rains. In the higher areas (about 4,800 feet) of North and South Nyanza hail damage was very severe; bacterial blight was particularly devastating in the blackarm form of this disease, entry to the stems and branches having been made through hail lesions.

Cotton planting was delayed in most areas, being slightly earlier in South Nyanza than in the rest of the Province. In Samia the crop was planted very late but the prolonged second rains enabled the growers to obtain good yields.

Cotton Crop.

In the 1951-52 season 1,400 tons of S47 seed were imported from Uganda to replace BP52 in North Nyanza and the Samia district of Central Nyanza. The remainder of Central Nyanza and South Nyanza were planted with N17.

Cotton production rose to 11,719 bales as compared with 8,594 bales in 1950-51. Central Nyanza accounted for 52% of the cotton produced in Nyanza Province. The increased price paid to the grower, 49 cents per lb. of seed cotton, was most probably the cause of the increase in production.

Pests and Diseases.

Bollworm.

In all areas this was the first major pest to make its appearance. The commonest species were American bollworm (*Heliothis armigera*) and spiny bollworm (*Earias spp.*), the former occurring in greater numbers and causing most of the damage attributable to bollworm. Losses caused by false codling moth (*Argyroploce leucotreta*) were negligible.

In North Nyanza, where the crop was late planted, bollworm was noted fairly late in the year. American bollworm caused a considerable amount of damage but heavy hailstorms in September with follow-up of *Lygus* and bacterial blight left little on which this pest could feed. Where there was good growth, as at Adungosis, the effect of bollworm attack was much greater than the combined effects of *Lygus* and bacterial blight.

In Central Nyanza, in the May-June plantings, American bollworm did a great deal of damage. Its presence was first noted in July and it remained active throughout the season. As in Samia, later plantings were less affected.

In South Nyanza, as in Central Nyanza, the earlier planted cotton was most damaged. It would appear that the maize crop matures just as these plantings are bearing their first flowers and bolls. The American bollworm migrates to cotton at this very vulnerable stage with the result that most of the early bolls, buds and flowers are lost. Of all the pests and disease in this area, bollworm appeared to cause the greatest losses.

In North and part of Central Nyanza two crops of maize are taken each year, and consequently American bollworm can be expected at any time after July.

Lygus.

The next important pest to follow after bollworm is *Lygus*. Once the sorghum crop has matured *Lygus* migrates to cotton. If the cotton plants are at an early stage of development a moderate infestation of *Lygus* can ruin the crop. Everywhere in the cotton areas sorghum can be found in quantity. As North Nyanza is a wet area the sorghum crop tends to be late and the first effects of *Lygus* were noted in the latter half of September. By October damage was very severe. In addition to bud losses and shredding of leaves, fruiting branches were truncated to such a degree that very little recovery was made. Very late planted cotton escaped severe damage from this pest.

The presence of *Lygus* on the cotton crop was noted in Kano in late July-early August but it was not till October-November that any marked damage was caused. By this time most plants were fairly well grown and only loss of late buds and shredding of young top leaves occurred. In Samia, although *Lygus* was noted, it was of no importance.

Lygus caused considerable damage in South Nyanza. It first appeared on cotton in mid-July and its effect built up till mid-September after which it seemed to migrate elsewhere. South Nyanza is the earliest of the cotton and sorghum areas, and plants are at a very vulnerable stage when *Lygus* migrates. The early *Lygus* migration overlaps with the latter end of the bollworm attack. Their combined effect was responsible for most of the losses in South Nyanza.

Bacterial Blight.

This disease has been considered the major cause of crop loss in Nyanza Province, but it was only at the higher altitudes that this could be said to be the case. In these areas where heavy attacks from *Lygus* and bacterial blight occurred there was very little crop to pick and the plants were so malformed that no recovery would have been possible.

During September, parts of North Nyanza experienced heavy rainstorms accompanied by hail. Night temperatures in these higher areas are fairly low. These combined effects tend to accentuate the spread

of bacterial blight in both the blackarm and angular leaf spot forms, and the cold wet conditions reduce plant growth and vigour. Bacterial blight followed the incidence of *Lygus* and overlapped most of the period when the latter showed its greatest activity. Their combined effect was devastating.

On the Kano Plain much of the staining of cotton picked in January could be attributed to bacterial blight. In Samia this disease caused negligible damage.

The main cotton area in South Nyanza is between Homa Bay and Kendu Bay, and there the losses from bacterial blight were almost negligible in spite of the fact that this disease was ubiquitous and the rains heavier than normal.

Stainers.

Stainers (*Dysdercus spp.*) were active throughout the season in all the cotton areas. The tendency was for the greatest numbers to be found at the lower limits. On the Kano Plain stainers were very active and were responsible for much of the stained cotton picked. In Samia this pest did little damage. Throughout South Nyanza stainers were active during the whole cotton season. Numbers were large but the damage, though considerable, was not as great as one would have expected.

Other Pests.

Helopeltis occurred sporadically throughout the province.

Jassid was of importance only in the area where N17 was grown. This variety has little jassid resistance and from October to the end of this season considerable losses were sustained in Kano and South Nyanza.

Observation Plots.

For this first season the programme of work consisted mainly of planting numerous varieties and strains of cotton, which it was thought might do well in Nyanza Province, for observational purposes in a number of scattered plots throughout the cotton area. Those at high levels were completely devastated by pests and disease, and the one at Kendu (lake level) was flooded. The only places where results were obtained were Adungosis in North Nyanza and Sio Port in Samia. Cultivation experiments were tried at Bungoma, where about 10 acres of land had been cleared, but no results were obtained because of damage from weather, pests and disease. This station will be valuable in the future for testing bacterial blight resistant varieties.

On Kibos, as land clearing did not start until May 1951, the only work which could be undertaken was a modified record of plant losses.

The results of the trials follow.

North Nyanza—Adungosis observation plots.

	Yield in lb. seed cotton per acre.	
	Range.	*Average.*
8 strains from Ukiriguru, Tanganyika	642 to 1153	873
12 ,, ,, Barberton, S. Africa	221 to 836	514

These plots were very much better than surrounding African-grown cotton. During the 1952-53 season a replicated trial containing the Ukiriguru strains, Uk48, S47, and DE715 will be planted at Adungosis. Both Uk48 and S47 are commercial varieties, from Tanganyika and Uganda respectively; DE715 is a promising variety produced by the Uganda Department of Agriculture.

Central Nyanza—Sio Port observation plots.

	Yield in lb. seed cotton per acre.	
	Range.	*Average.*
8 strains from Ukiriguru, Tanganyika	1210 to 1597	1445
12 ,, ,, Barberton, S. Africa	677 to 1355	1008
S47. Commercial variety from Uganda		1863
BP52 ,, ,, ,, ,,		1766
Uk48 ,, ,, ,, Tanganyika		1331
E47-1. Selection from S47 made at Namulonge		1645
E47-2. ,, ,, ,, ,, ,, ,,		1645
3MB Modal bulk from BP52 ,, ,, ,,		1403

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